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Date: January 29, 2021

To: COMMISSIONERS AND INTERESTED PERSONS

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Subject: STAFF RECOMMENDATION ON SAN DIEGO UNIFIED PORT DISTRICT PORT MASTER PLAN AMENDMENT NO. PMP-6-PSD-20-0001-01 (Pilot Native Oyster Living Shoreline) for Commission Meeting of February 10, 2021

SUMMARY OF AMENDMENT REQUEST

The San Diego Unified Port District (Port) proposes to amend the certified Port Master Plan (PMP) to allow for the installation of a pilot native oyster living shoreline project adjacent to the Chula Vista Wildlife Refuge in south San Diego Bay in the City of Chula Vista. The subject amendment is a project-driven Port Master Plan Amendment (PMPA) that would update the text and project list of the Chula Vista Bayfront Planning District 7 in the PMP to allow for the proposed pilot project. The project proponents are the Port and the California Coastal Conservancy. The standard of review is the Chapter 3 and Chapter 8 policies of the Coastal Act.

The purpose of the project is to study the ability of artificial reef ball elements to protect the shoreline from erosion while providing habitat for native oysters. The project site is an intertidal mudflat in an area mapped as wetlands in the PMP and known to have historical erosion issues. Specifically, the project includes the placement of 360, 2 ft. tall constructed reef ball elements made from baycrete (concrete mixed with local sand and oyster shell aggregate) and would have a top diameter of approximately 2 ft. and a 4 ft. foot base. Individual reef ball elements would be placed in a series of six total arrays at two tidal elevations. Within the arrays, reef ball elements would be organized into 15 groups, each consisting of four reef ball elements placed in a square pattern for a total of 60 reef ball elements per array (Exhibit 2). The cumulative footprint of the reef ball elements in all six arrays would be approximately 5,760 sq. ft.

SUMMARY OF STAFF RECOMMENDATION

Staff is recommending approval of the proposed Port Master Plan Amendment as submitted by the San Diego Unified Port District.

Section 30233 of the Coastal Act allows the placement of fill only if there is no feasible less environmentally damaging alternative, where feasible mitigation measures have been provided to minimize adverse environmental effects, and if the fill falls within at least one of eight allowable uses.

The proposed project would result in 360 reef ball structures equivalent to 5,760 sq. ft. (0.13 acre) of fill in the San Diego Bay and, as such, the proposed project must first qualify as one of the eight stated uses allowed under Section 30233(a). In this case, the proposed project qualifies as a “nature study” because the project is a pilot-scale research effort to create an artificial off-shore reef for native Olympia oysters (Ostrea lurida) and study whether it is successful in reducing shoreline erosion and providing native oyster habitat benefits. The proposed project is managed by a multi-agency project team that consists of the Port, the California Coastal Conservancy, U.S. Fish and Wildlife Service, Southwest Wetlands Interpretive Association, and California State University, Fullerton. In order to ensure that the project minimizes potential adverse environmental effects, the project is supported by a Technical Advisory Committee (TAC) which includes technical experts from the Universities of California, Davis and Santa Cruz; and from California Sea Grant, the National Marine Fisheries Service, the California Department of Fish and Wildlife, and the Commission. The pilot project will be monitored for five years to determine: 1) whether native Olympia oysters are successfully recruited onto constructed reef ball elements, 2) the effect of tidal elevation on recruitment of native and non-native oysters, 3) the ability of the constructed reefs to protect the shoreline from erosion and flooding, and 4) whether constructed reefs support higher levels of biodiversity than in adjacent mudflats.

The project is anticipated to enhance the functional capacity of the wetlands in the project area by creating habitat for native oysters and minimizing shoreline erosion of the Chula Vista Wildlife Reserve; however, the proposed PMPA language includes specific performance criteria developed by the TAC to determine whether the project is successful, as well as removal criteria if the project and adaptive measures are not successful. The TAC would meet at least once a year to discuss the monitoring results and decide on adaptive management measures if the project is not on track to meet the success criteria. If any of the following removal criteria are met after the five-year monitoring period, the reef ball elements would be required to be removed to mitigate any unanticipated environmental effects: native oysters recruit with lower densities than comparable sites (i.e., hard substrate in similar configurations such as cobble and rip-rap, at similar elevations), oyster reef elements are more dominated by non-native species than comparable sites, or shoreline erosion occurs shoreward of oyster reef elements at higher rates than the comparable sites. As such, the project can be found to contain adequate measures to mitigate against any coastal resource impacts under Section 30233 of the Coastal Act.

The proposed project is also the least environmentally damaging alternative, as required by Section 30233. The proposed project has been designed to encourage the colonization of native oysters while decreasing the likelihood of non-native oyster recruitment through the selection of material type, array configuration, and tidal elevations. Prior to the current

proposal, the applicant proposed an alternative project location adjacent to the E Street Marsh in Chula Vista. However, in that location, the project would have resulted in the loss of at least 4,410 sq. ft. of eelgrass habitat located within the proposed physical footprint of the reef ball structures. In regard to the proposed project location, while eelgrass has been historically present at the project site, it has not recently been found at this location (Exhibit 2). As such, no impacts to eelgrass are expected to occur. Additionally, the project would comply with the California Eelgrass Mitigation Policy, which requires the Port to retain a qualified biologist to conduct pre- and post-installation surveys to confirm that eelgrass has not been impacted by project activities and requires appropriate mitigation if any eelgrass impacts do occur. Port staff has indicated that this requirement will be included as a special condition of the CDP.

After the proposed PMPA is certified, the Port will process a Coastal Development Permit (CDP) for the project. The Port-issued CDP will not be appealable to the Commission; however, Port staff have agreed to coordinate with Commission staff on the language of the draft CDP, and Commission staff will continue to be involved in the project as part of the TAC.

The appropriate motion and resolution can be found on Page 5. The findings for approval of the Port Master Plan amendment as submitted begin on Page 5.

ADDITIONAL INFORMATION

Further information on the subject PMPA may be obtained from Melody Lasiter, Coastal Program Analyst, at Melody.Lasiter@coastal.ca.gov.

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EXHIBITS

I. MOTION AND RESOLUTION

Following a public hearing, staff recommends the Commission adopt the following resolution and findings.

MOTION:

> I move that the Commission certify the Port Master Plan Amendment No. PMP-6-PSD-20-0001-01 as submitted by the San Diego Unified Port District.

STAFF RECOMMENDATION OF CERTIFICATION AS SUBMITTED:

Staff recommends a **YES** vote. Passage of this motion will result in certification of the port master plan amendment and adoption of the following resolution and findings. The motion to certify as submitted passes only by an affirmative vote of a majority of the Commissioners present.

RESOLUTION TO CERTIFY PORT MASTER PLAN AMENDMENT:

> The Commission hereby certifies San Diego Unified Port District Master Plan Amendment No. PMP-6-PSD-20-0001-01 as submitted and adopts the findings set forth below on grounds that the amendment is consistent with Chapter 3 and Chapter 8 of the Coastal Act. Certification of the amendment complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the amendment on the environment, or 2) there are no further feasible alternatives and mitigation measures that would substantially lessen any significant adverse impacts on the environment that will result from certification of the port master plan amendment.

II. FINDINGS FOR APPROVAL OF THE PORT MASTER PLAN AMENDMENT

A. PREVIOUS COMMISSION ACTION

The Commission certified the San Diego Unified Port District Master Plan on October 14, 1980. The Commission has reviewed 51 amendments since that date. The subject PMPA would be Amendment #52.

B. CONTENTS OF PORT MASTER PLAN AMENDMENTS

California Code of Regulations Title 14, Section 13656 calls for port master plan amendments to be certified in the same manner as port master plans. Section 30711 of the Coastal Act states, in part, that a port master plan shall include all the following:

> (1) The proposed uses of land and water areas, where known.

(2) The proposed design and location of port land areas, water areas, berthing, and navigation ways and systems intended to serve commercial traffic within the area of jurisdiction of the port governing body.

(3) An estimate of the effect of development on habitat areas and the marine environment, a review of existing water quality, habitat areas, and quantitative and qualitative biological inventories, and proposals to minimize and mitigate any substantial adverse impact.

(4) Proposed projects listed as appealable in Section 30715 in sufficient detail to be able to determine their consistency with the policies of Chapter 3 (commencing with Section 30200) of this division.

(5) Provisions for adequate public hearings and public participation in port planning and development decisions.

The Commission finds that the proposed port master plan amendment conforms with the provisions of Section 30711 of the Coastal Act. The port master plan amendment submittal outlines in sufficient detail the proposed use within wetlands along with an estimate of the effect of development on habitat areas and the marine environment, a review of existing water quality, habitat areas, and quantitative and qualitative biological inventories, and proposals to minimize and mitigate any substantial adverse impact, and adds the project to the planning district's project list; as such, the Commission is able to make a determination of the proposed amendment's consistency with the Chapter 3 and Chapter 8 policies of the Coastal Act.

The proposed amendment was found to be Categorically Exempt under Section 3d Minor Alterations to Land, Class 4 and Section 3f Information Collection, Class 6 of the California Environmental Quality Act. The Categorical Exemption was issued by Port staff on October 29, 2020. A public hearing on the proposed master plan amendment was held and the amendment was adopted by the Board of Port Commissioners on December 8, 2020 as Resolution No. 2020-118 (Exhibit 3).

C. STANDARD OF REVIEW

Section 30710 states that Chapter 8 shall govern those portions of the San Diego Unified Port District, excluding any wetland, estuary, or existing recreation area indicated in Part IV of the Coastal Plan. The entire water area under the jurisdiction of the Port is governed by Chapter 3 policies because San Diego Bay is mapped as an estuary and wetland in Part IV of the Coastal Plan, and on the maps adopted by the Commission pursuant to Section 30710 of the Act. The proposed amendment would modify the text in the Chula Vista Planning District of the PMP to allow for the installation of a pilot native oyster living shoreline project in water mapped as wetlands; and thus, the PMPA must be consistent with the Chapter 3 and Chapter 8 policies of the Coastal Act.

D. SUMMARY OF PROPOSED PLAN AMENDMENT/HISTORY

Project Description

The San Diego Unified Port District (Port) proposes to amend the Port Master Plan (PMP) to allow for the installation of a pilot native oyster living shoreline project adjacent to the Chula Vista Wildlife Reserve, a 55-acre island created from dredged material in south San Diego Bay. The proposed project would be located north of the access route to the island in an area designated as wetlands in the PMP (Exhibit 1).

The purpose of this pilot project is to study the ability of constructed reef ball elements to protect the shoreline from erosion, while also creating habitat for native Olympia oysters (Ostrea lurida). The subject amendment is project-driven, and the project proponents are the Port and the California Coastal Conservancy. After the proposed amendment is certified, the Port will process a coastal development permit (CDP) for the project, which will not be appealable to the Commission; however, Commission staff will continue to be involved in the project as part of the Technical Advisory Committee (TAC), and Port staff has agreed to coordinate with Commission staff on the language of the draft CDP.

Specifically, the project would include the placement of 360, 2 ft. tall constructed reef ball elements made from baycrete (concrete mixed with local sand and oyster shell aggregate) with a top diameter of approximately 2 ft. and a 4 ft. base. Individual reef ball elements would be placed in a series of six total arrays at two tidal elevations in the mudflats along the project site. Within the arrays, reef ball elements would be organized into 15 groups, each consisting of four reef ball elements placed in a square pattern for a total of 60 reef ball elements per array (Exhibit 2). The cumulative footprint of the reef ball elements in all six arrays would be approximately 5,760 sq. ft or 0.13 acre.

Following installation, a five-year physical and biological monitoring program will be used to assess the pilot project's success, which will be measured against the following success criteria:

1. Native Olympia oysters recruit with mean densities per square meter of substrate on constructed oyster reef elements at statistically significantly higher densities than comparable sites in San Diego Bay. Comparable sites will be hard substrate in similar configurations, such as cobble and riprap, at similar elevations.
2. The ratio of native to non-native species (including invertebrates & algae) areal coverage on constructed oyster reef elements is statistically significantly higher than comparable sites in San Diego Bay.
3. The ratio of non-native Pacific oyster (C. gigas) areal coverage to native Olympia oyster that occupy constructed oyster reef elements are equivalent to or lower than ratios at comparable sites in San Diego Bay.
4. The percent change in native species richness of fish and mobile invertebrates captured within oyster reef arrays over the five year postconstruction monitoring period is equivalent to or higher than the percent change in native species richness of these organisms at adjacent mudflat/eelgrass controls and comparable sites within San Diego Bay.
5. Presence of oyster reef arrays result in significant accretion or lower erosion of sediment shoreward of the arrays, as compared to control plots.

The results will be tracked and discussed by the TAC at least annually and adaptive management measures would be considered by the TAC if deemed necessary for success criteria that are not being met. At the conclusion of the five-year monitoring period, if adaptive management is not successful or feasible, the reef ball elements or a portion of the reef ball elements would be removed if one or more of the following removal criteria are met:

1. Native Olympia oysters recruit with mean densities on constructed oyster reef elements at statistically significantly lower densities than comparable sites in San Diego Bay.
2. Constructed oyster reef elements are more dominated by non-native species with statistically significantly higher areal coverages of non-natives than comparable sites.
3. Shoreline erosion occurs shoreward of constructed oyster reef elements at rates statistically significantly higher than comparable sites.

The reef ball elements would be left in place as oyster habitat if the pilot project does not meet any of the removal criteria upon conclusion of the five-year monitoring period.

Amendment Description

The proposed PMPA would modify the text of the Wildlife Reserve subarea of the Chula Vista Bayfront Planning District 7 and add the proposed project as a non-appealable project to the Chula Vista Bayfront Project List (Table 19) to allow for the Native Oyster Living Shoreline Pilot Project (Exhibit 3). The PMP text revisions would include a description of the subject project including project design, purpose, success criteria, and removal criteria.

E. FINDINGS FOR CONSISTENCY WITH CHAPTER 3/CHAPTER 8 OF COASTAL ACT

1. Sensitive Resources

The following Coastal Act policies are relevant and applicable:

Section 30233

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following: […]

(7) Nature study, aquaculture, or similar resource-dependent activities.[…]

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands

identified in its report entitled, “Acquisition Priorities for the Coastal Wetlands of California”, shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.[…]

Section 30240(b)

Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Section 30705

(a) Water areas may be diked, filled, or dredged when consistent with a certified port master plan only for the following: […]

(7) Nature study, mariculture, or similar resource-dependent activities. […]

(d) For water areas to be diked, filled, or dredged, the commission shall balance and consider socioeconomic and environmental factors.

Section 30706

In addition to the other provisions of this chapter, the policies contained in this section shall govern filling seaward of the mean high tide line within the jurisdiction of ports:

(a) The water area to be filled shall be the minimum necessary to achieve the purpose of the fill.

(b) The nature, location, and extent of any fill, including the disposal of dredge spoils within an area designated for fill, shall minimize harmful effects to coastal resources, such as water quality, fish or wildlife resources, recreational resources, or sand transport systems, and shall minimize reductions of the volume, surface area, or circulation of water.

(c) The fill is constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters.

(d) The fill is consistent with navigational safety.

Section 30708

All port-related developments shall be located, designed, and constructed so as to:

(a) Minimize substantial adverse environmental impacts. […]

(d) Provide for other beneficial uses consistent with the public trust, including, but not limited to, recreation and wildlife habitat uses, to the extent feasible. […]

Section 30711

(a) A port master plan that carries out the provisions of this chapter shall be prepared and adopted by each port governing body, and for informational purposes, each city, county, or city and county which has a port within its jurisdiction shall incorporate the certified port master plan in its local coastal program. A port master plan shall include all of the following:

(1) The proposed uses of land and water areas, where known.

(2) The projected design and location of port land areas, water areas, berthing, and navigation ways and systems intended to serve commercial traffic within the area of jurisdiction of the port governing body.

(3) An estimate of the effect of development on habitat areas and the marine environment, a review of existing water quality, habitat areas, and quantitative and qualitative biological inventories, and proposals to minimize and mitigate any substantial adverse impact.

(4) Proposed projects listed as appealable in Section 30715 in sufficient detail to be able to determine their consistency with the policies of Chapter 3 (commencing with Section 30200) of this division.

(5) Provisions for adequate public hearings and public participation in port planning and development decisions.

(b) A port master plan shall contain information in sufficient detail to allow the commission to determine its adequacy and conformity with the applicable policies of this division.

Section 30233(a) of the Coastal Act allows the placement of fill only if there is no feasible less environmentally damaging alternative, where feasible mitigation measures have been provided to minimize adverse environmental effects, and if the purpose for the fill qualifies as one of eight allowable uses. Section 30233(c) also requires the functional capacity of the wetland to be maintained or enhanced. Section 30705 limits fill to similar allowable uses and Section 30706 allows fill when it is the minimum necessary to achieve the goal of the fill, when harmful effects to coastal resources, such as water quality, fish or wildlife resources are minimized.

The proposed project would result in 360 reef ball structures equivalent to 5,760 sq. ft. (0.13 acre) of fill in the San Diego Bay and, as such, the proposed project must first qualify as one of the eight stated uses allowed under Section 30233(a). In this case, the proposed project qualifies as a “nature study” because the project is a pilot-scale research effort to create an artificial off-shore reef for native Olympia oysters and study whether it is successful in reducing shoreline erosion and providing native oyster habitat benefits. The proposed project is a nature-based alternative to typical shoreline protection measures, including revetments, riprap and sea walls, that temporarily prevent erosion, but have coastal resource impacts such as fixing the back of the beach or shoreline and reducing sand supply. However, because one of the primary purposes of this project is to prevent shoreline erosion, which is not one of the permissible uses of Section 30233(a), a PMPA is necessary to add the project to the planning district’s project list and describe the project in sufficient detail, including measures to mitigate any substantial adverse impacts, to allow

the Commission to determine the project's adequacy with the Coastal Act, as required by Section 30711.

The project is managed by a multi-agency project team that consists of the Port, the California Coastal Conservancy, U.S. Fish and Wildlife Service, Southwest Wetlands Interpretive Association, and California State University, Fullerton. The project is also supported by a Technical Advisory Committee (TAC) which includes technical experts from the Universities of California, Davis and Santa Cruz; and from California Sea Grant, the National Marine Fisheries Service, the California Department of Fish and Wildlife, and the Commission. These agencies have met regularly for the past several years to discuss and refine the project design, location, success criteria, and criteria for removal if the pilot project is not successful.

The project is designed to determine if native Olympia oysters will successfully recruit on constructed reef ball elements, the effect of tidal elevation on recruitment of native and non-native oysters, the ability of constructed reefs to protect the shoreline from erosion and flooding, and whether constructed reefs support higher levels of biodiversity than adjacent mudflats.

The project site is an intertidal mudflat in an area known to have historical erosion issues. In 2011-2012, the Port conducted a shoreline protection study to analyze the efficacy of various treatments to mitigate wind-wave erosion; however, the shoreline has continued to erode on either side of the treatments. The applicant has indicated that the erosion process seems to be due to the most common northwest waves as well as larger waves that diffract around the island.

Reef ball elements would be placed side by side into groups of four, which would then be arranged in a checkerboard pattern of 15 reef groups to form a reef array with 60 total reef balls per array (Exhibit 2). The purpose of this design is to minimize wave action across the reef, as wind-generated waves would encounter multiple reef groups as they travel from the San Diego Bay toward the shoreline.

Each reef array would be placed at one of two tidal elevations: +1 ft mean lower low water (MLLW) (with the base of reef elements at -1 ft MLLW and the crest at +1 ft MLLW), or +2 ft MLLW (with the base of reef elements at 0 ft MLLW and the crest at +2 ft MLLW). These elevations correspond to the elevations known as the highest recruitment and observed highest percent cover for native Olympia oyster, and also intersect with the tidal elevations expected to measurably reduce wave energy inshore. Each reef array would be oriented to follow the existing bathymetric contours, with some deviation due to the natural variation of the tidal flats. The orientation of the reef arrays would allow wind-generated waves from the two predominant wind directions (northwest and west) to be intercepted by the reef arrays.

Reef arrays would be placed in a blocked design. The purpose of this blocked design is to provide replication and to account for variation of physical characteristics (such as wind-generated wave exposure and sediment type) and biological characteristics (such as shorebird usage) along the shoreline of the project site. A total of three study blocks would extend along the shoreline within the project site. Each study block would consist of one randomly placed +2 ft MLLW reef array and a paired control area of similar size, and one randomly placed +1 ft MLLW reef array and a paired control area of similar size. Blocks would be spaced to ensure that they are outside of the zones of influence of other blocks.

In total, six reef arrays (three replicates at each of two tidal elevations) would require the placement of 360 reef ball elements.

The reef materials and elevation of the structures are specifically intended to be ideal for native Olympian oyster colonization. In addition, since the native Olympia oyster is known to recruit at lower tidal elevations than nonnative oysters, the tops of the structures would be removable to allow for modification of the total height of the reef balls. This adaptive design feature would allow Olympia oyster to grow and to prevent or eliminate habitat for non-native oysters and other non-native and invasive invertebrate species, if needed.

The timing for installation of the project is also designed to encourage native oyster recruitment. Specifically, the earliest observed seasonal recruitment of native Olympia oysters in San Diego Bay is in late April, but typically occurs between mid-May and mid-July. In contrast, the earliest observed recruitment of non-native Pacific oysters in the Bay is late May, with peak recruitment typically occurring between late June and early July. Therefore, the ideal seasonal timing for installation of oyster reef ball elements and arrays at the project site would be in late March or early April. Installation of the project would take approximately four weeks to complete and is anticipated to occur in late April or May of 2021, or March or April of 2022 depending on a variety of factors including funding and entitlements. This proposed installation period would allow native Olympia oyster recruits access to new reef substrate prior to colonization of the reefs by non-target and/or invasive species.

To maximize the research benefits of the project, advance scientific understanding and determine project success, the project team would conduct a five-year monitoring plan. During this time, the TAC would meet at least once a year to discuss the monitoring results and decide on adaptive management measures if the project is not on track to meet the success criteria that has been approved by the TAC and incorporated into the proposed PMPA language. Specifically, the project would be considered successful if native oysters recruit at higher densities on the constructed reef than comparable hard-substrate sites in the bay, if the ratio of native to non-native species occupation is higher than comparable sites, if the ratio of non-native to native oyster occupation is equal or lower that comparable sites, if the percent change in native species richness of fish and mobile invertebrates captured within the oyster reef arrays is equivalent or higher than the change at adjacent eelgrass and mudflats and comparable sites, and if significant accretion or lower erosion of sediment shoreward of the arrays occurs when compared to control plots.

The proposed project has been designed to provide valuable research into techniques for minimizing shoreline erosion that do not involve seawalls, revetments or riprap armoring, while also providing new habitat opportunities for native species in the project area; therefore, the proposed pilot project qualifies as a “nature study” and is permissible under Section 30233(a)(7) of the Coastal Act.

While south San Diego Bay is one of the “priority wetlands” afforded additional protection under Section 30233(c), the project has been designed to avoid adverse impacts to coastal resources in the bay and is anticipated to enhance the functional capacity of the wetlands in the project area by creating habitat for native oysters and minimizing shoreline erosion of the Chula Vista Wildlife Reserve. The project also meets the more restrictive range of purposes for alterations to priority wetlands since it qualifies as a nature study for the same rational discussed above.

The proposed project has been designed to be the least damaging alternative by encouraging the colonization of native oysters while decreasing the likelihood of non-native oyster recruitment through the selection of material type, array configuration, and tidal elevations. The TAC evaluated several construction material types, including encapsulated and loose oyster shells, natural aggregate (cobble), and man-made aggregate (crushed rock); plastic, mesh, and jute bags; and metal wire. However, the baycrete reef balls were found to be the least environmentally damaging material since they are known to support native oysters in past projects; are composed of natural materials and avoid plastics; are easier to maneuver into place in the field from a boat, thus minimizing adverse impacts to adjacent eelgrass and mudflats; and may be removed or modified in the future if removal criteria are met. In addition, the elevation of the reef balls (+1 and +2 MLLW) encourage the recruitment of native oysters while avoiding non-native oysters since non-native oysters are known to settle and grow at higher tidal elevations (over +2 MLLW) than native oysters who prefer elevations lower than +2 MLLW. Similarly, the reef balls would be configured with removable “tops” to allow for an adaptive management response to further lower the elevation of the reef balls in case excessive colonization by non-native oysters occurs.

Prior to the current proposal, the applicant proposed an alternative project location at the wide intertidal mudflat adjacent to the E Street Marsh in Chula Vista. However, in that location, the project would have resulted in the loss of at least 4,410 sq. ft. of eelgrass habitat located within the proposed physical footprint of the reef ball structures. Eelgrass (Zostera marina) is a highly productive aquatic plant consisting of tough cellulose leaves, which grows in dense beds in shallow, subtidal or intertidal unconsolidated sediments. Eelgrass provides important habitat for a variety of fish and other wildlife, according to the California Eelgrass Mitigation Policy (CEMP) (NMFS 2014) adopted by the National Marine Fisheries Service (NMFS) in coordination with a number of state and federal resource and regulatory agencies, including the Commission. For instance, eelgrass beds provide areas for fish egg laying, juvenile fish rearing, and waterfowl foraging. Sensitive species, such as the California least tern, a federally listed endangered species that nests at the adjacent Chula Vista Wildlife Reserve, utilize eelgrass beds as foraging grounds. In addition, eelgrass habitat is increasingly recognized among the most effective natural sources of carbon sequestration. The Commission has consistently provided eelgrass habitat with special protection under Coastal Act Section 30230 as an area of special biological significance.

The project proponents and TAC evaluated alternative project sites and determined that the proposed project site adjacent to the Chula Vista Wildlife Reserve would avoid or minimize eelgrass impacts. While eelgrass has been historically present around the project site, it has not recently been found at this location (based on eelgrass surveys carried out in 1993, 1999, 2004, 2008, 2011, 2014, 2017, and 2020) or within the footprint of the proposed reef ball elements (Exhibit 2). As such, the project has been designed to discourage the recruitment of non-native oysters and no impacts to eelgrass are expected to occur; therefore, the proposed project is the least environmentally damaging alternative under Section 30233 of the Coastal Act.

Additionally, the project would comply with the California Eelgrass Mitigation Policy, which requires the Port to retain a qualified biologist to conduct pre- and post-installation surveys to confirm that eelgrass has not been impacted by project activities and requires

appropriate mitigation if any eelgrass impacts do occur. Port staff has indicated that this requirement will be included as a special condition of the CDP.

Pursuant to Section 30233, not only is the proposed project required to be the least environmentally damaging alternative, but it must also include feasible mitigation measures to minimize adverse environmental effects. The proposed PMPA includes language to ensure removal of the reef ball structures if the project is shown to impact coastal resources. Specifically, if, at the conclusion of the five-year monitoring period, adaptive management measures are not successful or feasible, the reef ball elements or portion of the reef ball elements that meet the following criteria would be removed: native oysters recruit with lower densities than comparable sites, oyster reef elements are more dominated by non-native species than comparable sites, and shoreline erosion occurs shoreward of oyster reef elements at higher rates than the comparable sites. As such, the project can be found to contain adequate measures to mitigate against any coastal resource impacts.

Finally, the subject amendment is necessary to add the proposed project to the planning district's project list and describe the project in sufficient detail to allow the Commission to determine its adequacy and conformity with the Coastal Act. The proposed port master plan amendment text outlines in sufficient detail the proposed use within wetlands along with an estimate of the effect of the pilot project on habitat areas and the marine environment, and proposals to minimize and mitigate any substantial adverse impact, and adds the project to the project list; as such, the Commission is able to make a determination of the proposed amendment's consistency with the Chapter 3 and Chapter 8 policies of the Coastal Act as required by Section 30711.

Therefore, as proposed, the project will not have any impacts to sensitive resources that will not be adequately mitigated. As such, the amendment is consistent with the cited Coastal Act policies and will assure the protection of sensitive resources.

2. Marine Resources and Water Quality

The following Coastal Act policies are relevant and applicable:

Section 30230

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

The above cited Coastal Act policies are intended to protect the water quality and biological productivity of coastal waters and marine resources. The proposed project includes the placement of constructed reef ball structures in San Diego Bay which has the potential to result in impacts to soft-bottom habitat, marine water quality, sea turtles, marine mammals, and seabirds.

The conversion of soft-bottom mudflat habitat to artificial reef may have short-term impacts to species, such as shorebirds and fish, by temporarily displacing these individuals to adjacent mudflats and open water areas in the vicinity for foraging. However, these impacts are anticipated to be short-term and not likely to significantly affect these species. During installation of the project, it is likely that many invertebrates will also be buried. However, the structures will be spread out and each one will be surrounded by adjacent mudflat areas that support similar invertebrate species and will continue to inhabit the area and provide a food source for fish and bird species in the project area. To ensure no special or rare species occur in the project area that could be impacted, the Port has indicated that the CDP for the project will include a special condition requiring a pre-construction biological survey of the project site and throughout the duration of the project.

Increased turbidity could negatively impact eelgrass habitat, avian foraging, and other aquatic life. In this case, reef ball elements would be transported to the project location by a shallow draft barge and/or workboat vessel which would then gently lower the reef ball elements into the water at high tide using a winch attached to an A-frame or davit. Each reef ball element would be hand guided into place by in-water biologists or marine technicians to achieve proper installation and to ensure placement at target tidal elevations. As such, construction activities are not likely to increase turbidity.

South San Diego Bay supports a population of eastern Pacific green sea turtles of between 16 and 61 individuals and project installation will occur adjacent to eelgrass habitat know to support the turtles. To avoid impacts to turtles during installation, the project will maintain a no wake vessel speed, prohibit the revving of boat engines (which is known to disturb eelgrass in shallow waters) and anchoring, and include an on-site biological monitor to ensure that turtles are not present prior to the placement of oyster reef elements.

While marine mammals are known to utilize San Diego Bay, they are not often observed in south San Diego Bay and are not expected to occur at the project site. However, the construction measures employed for green sea turtles, including maintenance of no wake vessel speed, and an on-site biological monitor to ensure that marine mammals are not present prior to placement of oyster reef materials, will prevent impacts to marine mammals should they be found in or adjacent to the project site.

California least terns are seasonal residents of San Diego Bay, typically arriving in mid- to late-April to nest at several colonies adjacent to San Diego Bay, including the Chula Vista Wildlife Reserve. California least terns actively forage for fish in the waters adjacent to nesting colonies which could be impacted by project installation. It is anticipated that project construction will occur in March or early April to coincide with the known peak seasonal recruitment of native oyster and outside of the nesting season for California least tern. However, as mentioned above, project installation is not expected to cause turbidity and a biological monitor will be onsite during project activities, thus no impacts to the foraging birds are anticipated. In addition, staff from the U.S. Fish and Wildlife Service is part of the project team and has helped design the project to avoid potential impacts to the California least terns.

Therefore, the amendment is consistent with the cited Coastal Act policies and will assure the protection of marine resources and water quality.

II. CONSISTENCY WITH CEQA

This is a project-driven amendment and the Port has determined that the project is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to California Code of Regulations, title 14 section 15302, Class 4 Minor Alterations to Land and Class 6 Information Collection. As described above, the proposed amendment does not have the potential to result in significant adverse impacts to the environment of the Coastal Zone, including the potential to result in significant individual or cumulative impacts to sensitive resources or public access and recreation. As proposed, there are no feasible alternatives or mitigation measures available which would substantially lessen any significant adverse impact which the amendment may have on the environment. Therefore, the Commission finds that the PMPA, as submitted, is consistent with the California Environmental Quality Act, as well as the applicable provisions of Chapter 3 and Chapter 8 of the Coastal Act.